1. (Currently amended) A method for determining whether any of a predetermined set of tones present in a plurality of successive frames of digital samples of a received signal falls within a predetermined frequency tolerance, comprising the steps of:

obtaining discrete Fourier transform pairs of in-phase and quadrature dot products of said samples and integer multiples of a base frequency, said base frequency being determined by the quotient of the sampling frequency and a multiple of the number of samples in successive ones of said frames;

computing the quotients of ~~determining the phase angle~~ ~~for~~ the highest power ones of said products obtained on successive frames;

using said quotients to approximate an arctangent function for ascertaining the phase of frequencies contained in successive frames;

computing the phase change for each of said frequencies by subtracting the phase of a previous phase frame from the current frame; and

subtracting an ~~offset~~ expected phase change from said computed phase change ~~angle~~ of said highest power ones of said products to determine the deviation of an observed tone from said predetermined frequency tolerance.

2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)

7. (Currently amended) ~~A method for determining said tones according to claim 3,~~ ~~wherein~~ A method for determining whether any of a predetermined set of tones present in a plurality of successive frames of digital samples of a received signal falls within a predetermined frequency tolerance, comprising the steps of:

obtaining discrete Fourier transform pairs of in-phase and quadrature dot products of said samples and integer multiples of a base frequency, said base frequency being determined by the quotient of the sampling frequency and a multiple of the number of samples in successive ones of said frames ;

computing an expected phase change between successive frames as the quotient of the quadrature and in-phase products for small absolute values of the quotient;

approximating an arc tangent function for the phase angle for the highest power ones of said products obtained on successive frames by the quotient of the quadrature and in-phase dot products for small absolute values of the quotient;

subtracting said expected phase change from the phase angle of said highest power ones of said products to determine the deviation of an observed tone from said predetermined frequency tolerance; said approximation of said arc tangent function Theta ~~is~~ being performed as follows:

a. for I >= 0, Q >= 0, AI > AQ, and 0 <= Theta <= π/4,

Theta = Theta1;

b. for I >= 0, Q >= 0, AI < AQ, and π/4 <= Theta <= π/2,

Theta = π/2 – Theta1;

c. for I < 0, Q >= 0, AI > AQ, and 3/4π <= Theta <= π,

Theta = π – Theta1;

d. for I < 0, Q >= 0, AI < AQ , and π/2 <= Theta <= 3/4π,

Theta = π/2 + Theta1;

e. for I >= 0, Q < 0, AI > AQ, and -π/4 <= Theta <= 0,

Theta = -Theta1;

f. for I >= 0, Q < =, AI < AQ, and $-\pi/2$ <= Theta <= $-\pi/4$,

Theta = $-\pi/2$ + Theta;

g. for I < 0, Q < 0, AI > AQ, and $-\pi$ < Theta <= $-3/4\pi$,

Theta = $-\pi$ + Theta1; and

h. for I < 0, Q < 0, AI < AQ, and $-3/4\pi$ <= Theta <= $-\pi/2$,

Theta = $-\pi/2$ – Theta1;

where I is the in-phase component; Q is the quadrature component; AI is the absolute value of I; AQ is the absolute value of Q; Theta 1 is the absolute value of AQ/AI.